



Michael O. Leavitt
Governor

Dianne R. Nielson, Ph.D.
Executive Director

Brent C. Bradford
Deputy Director

State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY OFFICE OF THE EXECUTIVE DIRECTOR

168 North 1950 West
P.O. Box 144810
Salt Lake City, Utah 84114-4810
(801) 536-4400
(801) 536-0061 Fax
(801) 536-4414 T.D.D.
www.deq.state.ut.us Web

February 8, 2000

Wendy R. Dixon, EIS Project Manager
Yucca Mountain Site Characterization Office
U.S. Department of Energy
P.O. Box 30307, M/S 010
North Las Vegas, NV 89036-0307

Dear Ms Dixon,

Re: Comments from the State of Utah regarding the Draft EIS for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada.

The State of Utah submits the following comments in response to the July 1999 Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (DEIS) issued by the U.S. Department of Energy. The State has a substantial interest in the DEIS analysis and decisions based on that analysis.

State Of Utah Interest And Impact

The State of Utah has a significant interest in the DEIS's evaluation of transporting spent nuclear fuel (SNF) and high-level waste (HLW) to the proposed Yucca Mountain Repository because of the direct impact on Utah's citizens and their road and rail corridors, watersheds, and commerce. The impact on Utah will be significant and has not been adequately evaluated in the DEIS.

First, although transportation routes have not yet been designated, the State of Utah will likely be a main corridor state for the transportation of SNF and HLW to the proposed Yucca Mountain repository and/or interim storage facility. Under the Mostly Legal-Weight Truck Scenario, the DEIS estimates approximately 50,000 legal-weight truck shipments to Yucca Mountain will occur over the

life of the project.¹ Under the Mostly Rail Shipment Scenario, the DEIS estimates about 11,000 rail cars and 2,600 legal-weight truck shipments will occur.² The number of shipments would dramatically increase if the storage capacity at Yucca Mountain was not capped at 70,000 MTUs.

While the DEIS fails to identify specific transportation routes, the State of Nevada projects that 92% of SNF and HLW will be transported through Utah en route to Yucca Mountain.³ In that event, more than 46,000 legal-weight trucks under the Mostly Legal-Weight Truck Scenario or 10,120 rail cars and 2,392 legal-weight trucks under the Mostly Rail Scenario will carry SNF or HLW through the State of Utah. Moreover, these rail lines and some highway routes will transport the irradiated fuel across prime Utah watersheds and through major population centers.

In addition, a centralized dry storage facility for commercial SNF has been proposed for Skull Valley, Utah, by Private Fuel Storage, LLC (PFS), a consortium of private utilities.⁴ Beginning in 2002, the PFS facility plans to begin accepting and storing up to 40,000 MTU of SNF. On a national scale, this volume of SNF is significant; it represents approximately half of the nation's projected volume of SNF that has been or will be generated from commercial nuclear reactors. If the PFS facility is built and operated, that facility would act as a clearing house for commercial SNF, and Utah could become a state of origin for more than half of the commercial irradiated fuel being transported to Yucca Mountain.

SNF will be transported by rail directly to the PFS facility or to an intermodal transfer facility at Rowley Junction, Utah. If the intermodal transfer facility alternative is selected, SNF would be transferred to heavy haul trucks and transported to the PFS facility. Similarly, SNF transferred from the PFS facility to Yucca Mountain will be transported either by rail or heavy haul truck to the intermodal transfer facility with the remainder by rail.

Transportation Routes Not Designated

Transportation of over 92% of the SNF and HLW shipments through Utah places an enormous burden on the State. The DEIS is inadequate because it fails to specifically evaluate the disproportionate impact on Utah from transportation of SNF and HLW to the proposed Yucca Mountain repository. It further fails to provide sufficient notice to numerous communities regarding impacts of transportation of SNF and HLW.

¹ DEIS at 2-43.

² *Id.*

³ See <http://www.state.nv.us/nucwaste/states/us.htm>

⁴ A license application is pending before the NRC, docket no. 72-22-ISFSI.

Although, DOE apparently selected specific routes for its analysis, the DEIS has failed to identify specific or even likely highway or rail transportation routes. The DEIS is incomplete due to this failure to identify the routes analyzed. First, it means that likely corridor communities may not be notified of the potential for SNF and HLW shipments being transported through their areas. The failure to identify likely transportation routes reduces public awareness and interest in the DEIS analysis and hampers overall meaningful input. Second, it means that the impacts on those specific communities, as well as states, have not been adequately evaluated.

Moreover, the failure to identify likely transportation routes conceals the need to evaluate impacts to highly affected areas like Utah. In fact, as stated earlier, the State of Nevada's analysis of various transportation routes indicates the "quickest [eastern] routes consistent with federal regulations" all pass through Utah (I-80, I-15, and I-70).⁵ In Nevada's assessment, approximately 92% of the SNF and HLW shipments will be transported through Utah.⁶

PFS Alternative Is Segmented and Not Evaluated

The DEIS assumes that SNF will be transported directly from generating commercial nuclear reactors to the proposed geologic repository. The DEIS is inadequate because it fails to consider that over 40,000 MTUs of commercial SNF could be routed through the proposed PFS facility.⁷ Thus, the PFS facility becomes an integral part of Yucca Mountain repository operations. Using the PFS facility as a clearinghouse will give reactors the option to transfer and store some or all of their SNF through PFS and the State of Utah.

The DEIS does not take into account the proposed PFS facility in its transportation assessment, resulting in an underestimate of the amount of actual vehicle miles traveled in moving irradiated nuclear fuel to the proposed geologic repository and an underestimate of the transportation environmental impacts. The path from generator sites (commercial power facilities) to Yucca Mountain via a PFS facility in Skull Valley, Utah is not a straight one. Therefore, there will be many additional miles traveled for SNF that is stored at the PFS facility. This has not been taken into account by the DEIS, resulting in segmentation of the scope of the DEIS and an inadequate estimation of the impacts of transportation.

⁵ Statement of Robert J. Halstead on Behalf of the State of Nevada Agency for Nuclear Projects Regarding U.S. Department of Energy's Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nevada. Presented at the Public Hearing in Atlanta, Georgia, October 21, 1999.

⁶ See <http://www.state.nv.us/nucwaste/states/us.htm>

⁷ PFS submitted a license application to the U.S. Nuclear Regulatory Agency in June 1997 for a 40,000 MTU Independent Spent Fuel Storage Installation (ISFSI), docket no. 72-22-ISFSI. In its license application, PFS plans to begin construction in September 2000 and begin accepting spent fuel in 2002.

In addition, it is obvious that the operation of the proposed PFS facility will also increase the amount of SNF transported through Utah. For example, the likely general transportation scenarios analyzed in the DEIS do not assume that SNF from California will be transported through Utah, as will be the case if the PFS facility is built. The DEIS also does not take into account the fact that the vast majority of SNF eventually shipped to Yucca Mountain will have to travel through the major metropolitan area of Salt Lake City. Because all of the SNF designed to be temporarily stored at the PFS facility is assumed to eventually be transported to Yucca Mountain, DOE must assess the impacts of this transportation.

The greater number of miles traveled with the operation of a PFS facility will impact both the incident-free and accident scenarios analyzed for transportation in the DEIS. More miles traveled will result in greater doses to drivers, escorts, and the general public through increased frequency of exposure to irradiated fuel shipments. In addition, because accident frequencies are based on the number of vehicle miles traveled, greater travel distances will result in greater probabilities of accidents. It may be the case that some accidents considered by DOE to be "not reasonably foreseeable" due to their low probability of occurrence must be analyzed when the additional travel distance resulting from the operation of a PFS facility are taken into account.

In fact, SNF stored at the proposed PFS facility will be transported through the Wasatch Front en route to the PFS facility and again en route to the Yucca Mountain Facility. Various areas of Utah, including Salt Lake City, will be exposed to the same waste shipments twice.

Shipment Of Fuel Discharged Earlier Than Assumed In Yucca Mountain EIS

The operation of the proposed PFS facility will also affect the average age of the irradiated fuel being transported to Yucca Mountain. This problem is not adequately evaluated in the DEIS.

In general, when the PFS facility is receiving SNF, the time between reactor operation and transportation of SNF will decrease, meaning "hotter" fuel will be transported. The longer irradiated fuel is stored after it is discharged from a reactor and before being transported, the less radioactive it becomes. If the PFS facility is licensed and begins operations, then fuel currently in storage at commercial reactor sites will be transported to the PFS facility, much before the Yucca Mountain repository begins operation. If and when the proposed geologic repository at Yucca Mountain begins accepting fuel, the utilities will ship more recently discharged irradiated nuclear fuel, stored in pools for five years, to Yucca Mountain while the older fuel sits in storage in Utah. It is in the utilities' best interests to remove all irradiated fuel from reactor sites in order to speed up the decommissioning of nuclear power plants. Thus, hotter fuel will be shipped directly to the proposed Yucca Mountain repository.

It is in this manner that the proposed PFS facility and the proposed geologic repository will likely be used together to remove irradiated fuel from nuclear generator facilities, resulting in greater hazard due to the transportation of less-cooled spent fuel. The "Acceptance Priority Ranking" referenced in the DEIS (DOE/RW-0457, 1995) does not consider the possibility of a PFS facility in its tentative determination of the order in which waste will be accepted by DOE. In addition, in response to a public comment on NUREG-1437, *General Environmental Impact Statement for License Renewal of Nuclear Plants*, 1999, the NRC makes it explicitly clear that "5 years is the minimum cooling time" required for transportation (A1-14). However, the DOE uses an average SNF age of 25.8 years in determining the health impacts of irradiated fuel transportation accidents in the Yucca Mountain EIS. This is clearly not conservative or realistic in light of the likely effects of the proposed PFS facility on transportation activities. Therefore, the increased hazard associated with the transport of less-cooled irradiated fuel must be considered by the DEIS.

The DEIS must also consider the cumulative effects on the State of Utah resulting from the transportation and storage of fuel within its boundaries. As it is likely that less-cooled, hotter fuel will be transported through Utah at the same time that approximately half of the nation's expected irradiated fuel will be transported and stored at Skull Valley, the DEIS needs to address these impacts.

The consideration of older fuel in its transportation analysis serves to ignore many potentially important contributors to overall dose. As radioactive materials follow an exponential decay pattern, using longer-cooled fuel than is realistic results in serious underestimates of the risks involved with spent fuel transportation to Yucca Mountain. In a 25.8 year period, important radioactive contaminants in irradiated fuel will have decayed away. For example, Co⁶⁰, a main contributor to radiation dose from crud spallation, has a half-life on the order of five years. Concentrating on 25.8 year fuel decreases the amount of Co⁶⁰ modeled by a factor of 2^5 , or 32, greatly underestimates possible radiological effects in the event of a release.

Disproportionate Amount of Irradiated Fuel Transported through Utah

Even without consideration of the proposed Private Fuel Storage Facility at Skull Valley, Utah, the State of Utah deserves special consideration with respect to transportation impacts resulting from the proposed geologic repository at Yucca Mountain, Nevada. The Nevada Agency for Nuclear Projects has estimated that 92% of all shipments to Yucca Mountain will pass through Utah.⁸ It is important to note that the Nevada analysis did not consider the impacts of a PFS facility. Instead of providing reasonable estimates of the likely health and economic consequences associated with transporting this much fuel through Utah, the DOE has, in the DEIS, analyzed a general transportation scenario that does not take into account specific route information. Because Utah is expected to be the main

⁸ See <http://www.state.nv.us/nucwaste/states/us.htm>

thoroughfare for the nation's waste, special consideration should be paid to the impact of transportation activities on Utah. The DOE should conduct a specific risk assessment of the transportation impacts on the State of Utah in a similar manner to the one conducted for Nevada in the DEIS. This need is further heightened if the proposed Private Fuel Storage Facility, to be operated at Skull Valley, Utah, is licensed.

Transportation By Heavy Haul Truck Not Analyzed

The DEIS is inadequate because it fails to analyze a national transportation scenario that utilizes heavy haul trucks.

SNF stored at the proposed PFS facility will be stored in casks that require transportation by rail or heavy haul truck. As discussed earlier, PFS may utilize an intermodal transfer facility at Timpie, Utah where SNF casks will be transferred from rail to heavy haul truck and presumably from heavy haul truck to rail for transit to Yucca Mountain.

Sabotage Downplayed

The DEIS downplays the possibility and consequences of sabotage using the modern weapons available to potential saboteurs. The sabotage risk in Utah is increased for three reasons:

- 1) Other than Nevada, Utah will experience more transportation shipments than any other state,
- 2) Unprotected transportation casks may back up in rail yards and at the intermodal transfer facility where casks will be unloaded from rail cars to heavy-haul road trailers, and
- 3) Unprotected storage casks will sit on the storage pads in Skull Valley.

The DEIS downplays the potential consequences of sabotage, equating the consequences to the effects of a severe transportation accident. The DEIS relies on a Sandia study which may not consider modern anti-tank weapons (MILAN, TOW-2); the Sandia study does not disclose what weapons it considered.⁹

The DEIS ignores the likely existence of an intermodal transfer facility in the State of Utah. This omission is a serious deficiency, resulting in an incomplete characterization of the environmental effects caused by the proposed project. Because the DEIS does not address potential acts of sabotage at intermodal transfer stations, there are no assurances that proper safeguards are in place to prevent or minimize the consequences of such events. Proper safeguards against potential acts of terrorism are important to the State of Utah. The proposed PFS facility is scheduled to begin operation in the year 2002, at least eight years before the Yucca Mountain operation begins accepting

⁹ DEIS at 6-33.

waste. If this happens, the most likely scenario will be that the PFS facility will serve as a de facto “rest stop” for irradiated fuel shipments to Yucca Mountain, with the older fuel remaining at the Skull Valley site while the less-aged fuel from reactor sites continues being shipped to the proposed repository. This scenario highlights how integrally connected the activities of the PFS facility and Yucca Mountain are, with the PFS facility acting as a default intermodal station in the shipment of irradiated fuel from the nation’s nuclear reactors to Yucca Mountain. Utilities would clearly prefer to remove all irradiated fuel so that reactor sites can be decommissioned as soon as possible.

In addition, the Salt Lake City region represents a major transfer point for rail and road shipments, where many shipments traveling east-west will change directions (and routes) for the final leg, i.e., south to Yucca Mountain. This is a natural stopping point for road and rail traffic. Therefore, it is likely that the PFS facility and other rail yards in the Salt Lake City area will provide an intermodal “rest stop” for much of the shipment to Yucca Mountain. This provides more basis for the fact that the activities of the PFS facility and Yucca Mountain repository cannot be separated and the undue transportation impacts on Utah must be considered. Further, the shipping casks designed for transportation to and storage at the proposed PFS facility have not been adequately tested for resistance to successful sabotage events.

No-Action Alternatives

The DEIS states that neither No-Action Scenario would be likely,¹⁰ ostensibly because the Nation could pursue one of numerous other alternatives to manage SNF and HLW if Yucca Mountain is not licensed. However, history has shown that the Nation and the federal government have failed to implement any of those other alternatives and have also failed to identify and implement a viable permanent storage option. If there are other scenarios which are considered viable, they should be analyzed as part of the EIS.

The No-Action Scenarios emphasize the problems created by temporary, consolidated storage facilities, which are also not considered in the DEIS, e.g., a temporary facility at Yucca Mountain and/or the proposed PFS facility in Skull Valley, Utah. Moving SNF to temporary facilities, which would not be constructed but for the status of a permanent facility, transfer the risk of storage to new sites.

The federal government should not license or operate any consolidated, temporary SNF storage facilities at Yucca Mountain or in Utah. Under any Scenario other than No-Action, such facilities would not be needed, based on the evaluation in the DEIS.

On the other hand, if temporary, consolidated SNF storage facilities are licensed at Yucca Mountain or Skull Valley, but permanent storage at Yucca Mountain ultimately is not licensed, the risks (as

¹⁰ DEIS at S.3.2

DEIS Comments from State of Utah
February 8, 2000
Page 8

defined in the No-Action Scenarios) will have been shifted from existing nuclear power plant facilities to new sites for which there is currently no risk or responsibility for management of high level nuclear waste. That impact, as indicated above, is not adequately addressed for Skull Valley, Utah or Yucca Mountain, Nevada in this DEIS.

Thank you for your consideration of these comments from the State of Utah.

Best regards,

/signed
Dianne R. Nielson, Ph.D.
Executive Director

DEIS Comments from State of Utah
February 8, 2000
Page 9

bcc.

Chancellor

Nelson

Hatch

Cannon

Stephens

Rad Control Board

State of Nevada

Nakahara

Harja

Bennett

Hansen

Doxey

Sisco

Lockhart

Sinclair

Cook

Beattie

Varela

Bradford